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Personal property tax vs value added tax: a comparative study with reference to Iowa

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by

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I. INTRODUCTION

A proposal to repeal the Personal Property Tax, (PPT), is presently under review by the State Legislature of Iowa. The Legislature, apart from evaluating the merits and demerits of the PPT presumably would also examine, inter alia, the alternative fiscal measures that would offset the revenue loss resulting from the repeal of the PPT. This aspect of the tax review is of considerable importance particularly because of a growing need for additional resources felt by state and local governments.

This study is limited to one of the alternatives open (2) to the legislature, namely, the replacement of the PPT by a Value Added Tax (VAT). The objectives of this study are two-fold. First, to undertake a comparative evaluation of the PPT and a VAT and to demonstrate the desirability of the replacement of the PPT by a VAT. The salient features of the PPT and the VAT are discussed in Chapters II and III, respectively. This is followed by a comparative study of the PPT and the VAT in Chapter IV. The second objective of this study is to identify the direction of the shift in tax burden if VAT is substituted for PPT. To facilitate a differential impact analysis estimates of the gross product originating in the State of Iowa are made in Chapter V and followed by a derivation of the tax base of the VAT. Using these data a differential impact analysis is undertaken in Chapter VI.

The limitations of this study should be recognized. It should be noted that the data with regard to the distribution of the net PPT (Table 5) and the gross state product (Table 9) are the result of crude approximations. Though absolute precision is not claimed for the estimated values, they should suffice for the intended purpose of this study.

II. PERSONAL PROPERTY TAX IN IOWA

A. Definition

The major components of the State of Iowa are realty, personalty and utilities. Of interest to this study is the tax on personalty held by individuals and institutions.

The term "personalty" generally refers to movable assets held by individuals and institutions. Thus, personalty includes intangible assets (namely, money, treasury bills and government bonds, private equities and bonds and all other forms of financial assets), and tangible assets (namely, producer and consumer durables, inventories of business and industry, motor vehicles in private and commercial use. Farm machinery and equipment, livestock etc.). Land and buildings thereon, houses and apartments, mines and fixed structures of factories, railroad and public utility companies do not fall under the category of personal property.

The tax base of the PPT, however, may or may not conform, in toto, to the definition of personalty. Considerations of equity, allocative efficiency, constitutionality, cost cum administrative efficiency of tax collection etc., may warrant the exclusion of certain personalty from the tax base. Consequently, the tax base of PPT differs from state to state in the U.S. (19).

B. Tax Base

In the State of Iowa, personalty is defined to include "money, goods, chattels, evidence of debt, and things in action" (Sub-section 9, Section 4.1, Code of Iowa, 1971). However, the tax base of the PPT is limited to tangible assets, excluding realty, that is owned by a resident or non-resident of the state, located within the state[1] (Section 427 A, Code of Iowa, 1971).

Moreover, personalty held by federal, state and local government institutions, libraries and art gallaries, educational, charitable and religious institutions, students, warehouses engaged in wholesale trade etc., are exempt from PPT. Further, personal property in transit, motor vehicles, public securities, capital stock of private companies, household goods, agricultural produce and bovine female cattle three years of age or older are also exempt from PPT (Section 427.1, Code of Iowa, 1971).

Thus, in the State of Iowa, the tax base of PPT would include items like boats, launches and portable motors, bicycles, jewelry, musical instruments, horses, mules, cattle and asses over one year of age (excepting bovine female cattle three years of age or older), sheep and swine over nine months

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[1]The commercial banks are subject to a separate levy on their money and credits.

of age; hotel, motel and apartment furniture; inventories of retail, wholesale and industrial enterprises; farm machinery and contractor equipment.

C. Tax Credit

According to the tax laws of the State of Iowa, a PPT credit of an amount not exceeding $2,700 is granted against the assessed value of tangible personal property owned by a person or business enterprise. An exception to this limit on PPT credit is when a husband, wife or minor children own farm units separately (11).

D. Assessed Value of Personalty and Tax Levies

Data showing the assessed value of realty, personalty and utilities and their relative shares, for the years 1960 thru 1971 are presented at Table 1. It will be seen that in the 60's, the relative share of personalty in the property tax base has been falling steadily from 14.8 per cent in 1960 to 9.7 per cent in 1971. The observed trend is, by and large, the outcome of the slower growth rate of personalty as compared to growth rates of realty and utilities. Moreover, the legislative changes in recent years, which resulted in the exclusion of household personalty (with effect from January 1, 1968) and bovine female cattle three years of age or older (with effect from January 1, 1970) from the tax base of the

Table 1. Assessed valuation of property: (1960-1971)[a] (million dollars)

Year	Realty	% of total	Personalty	% of total	Utility	% of total	State total
1960	3790	74.2	758	14.8	558	11.0	5106
1961	3923	74.5	762	14.5	581	11.0	5266
1962	4014	74.3	771	14.3	614	11.4	5398
1963	4074	74.1	795	14.4	631	11.5	5500
1964	4141	74.1	800	14.3	649	11.6	5590
1965	4483	75.7	771	13.0	670	11.3	5923
1966	4688	75.3	833	13.4	704	11.3	6225
1967	4791	75.3	833	13.1	741	11.6	6365
1968	5347	78.7	675	11.3	678	10.0	6790
1969	5770	79.6	777	10.7	704	9.7	7250
1970	5911	80.2	728	9.9	734	9.9	7373
1971	6143	80.2	745	9.7	776	10.1	7664

[a]Adopted from (31).

Table 2. Taxes levied: (1960-1971)[a] (million dollars)

Year	Realty	% of total	Personalty	% of total	Utility	% of total	State total
1960	282.3	74.2	57.7	15.2	40.3	10.6	380.3
1961	301.3	74.6	59.4	14.7	43.2	10.7	404.0
1962	316.4	74.5	61.5	14.5	46.6	11.0	424.5
1963	332.3	74.3	65.3	14.6	49.5	11.1	447.2
1964	349.8	74.5	67.9	14.5	51.6	11.0	469.4
1965	373.3	75.8	65.1	13.2	53.9	11.0	492.3
1966	412.0	75.5	73.7	13.5	60.1	11.0	545.8
1967	423.4	75.6	73.4	13.1	63.5	11.3	560.3
1968	468.8	79.2	66.1	11.2	57.4	9.6	592.2
1969	543.3	79.9	72.3	10.1	64.1	9.5	697.8
1970	600.0	80.3	75.2	10.1	71.9	9.6	747.1
1971	618.2	80.5	75.8	9.9	74.1	9.6	768.2

[a]Adopted from (31).

PPT, also contributed significantly to the decline in the relative share of personalty. Consequent to the shrinkage in the tax base, the tax levy on personalty declined relatively from 15.2 per cent in 1960 to 9.9 per cent in 1971 (Table 2). Thus, in the 60's, while realty has become an increasingly significant source of revenue, the significance of personalty has been withering away. Moreover, the importance of the PPT, as a source of revenue, would be further minimized if comparisons are to be made after allowing for tax credit on personalty This will be evident from Table 3, below, wherein data in respect of gross tax levy, tax credit and net tax levy are presented for the year 1971.

Table 3. Personal property tax[a] (millions of dollars)

	1971
1. Gross tax levy	75.8
2. Total credits	28.7
3. Net tax levy	47.1

[a]Adopted from (11).

An estimate of the origin of the PPT, in 1971, in terms of geographic areas and economic categories, is given in Table 4.

Table 4. A classification of the burden of PPT levied in 1971[a,b] (per cent)

	Urban	Rural	Total
1. Agriculture	0.8	34.6	35.4
2. Construction	1.1	0.8	1.9
3. Manufacture	14.0	2.2	16.1
4. Trade	41.1	2.3	43.4
5. Services	0.8	--	0.8
6. Other	1.8	0.5	2.4
Total	59.6	40.4	100.0

[a]Adopted from (11).

[b]Due to rounding, details may not add to total.

It will be seen that, of the total PPT levy of $75 millions in 1971, about 60 per cent was levied in urban areas and the balance in rural areas. Of late, the PPT levy has become more concentrated in urban areas, mainly as a result of legal exemption granted in 1968 and 1970, and partly on account of the growth in business. The observed concentration of the PPT in the urban areas is also attributable to the relatively high average tax rates in urban areas. If the estimates were to accommodate the tax credit granted, the resulting distributive pattern would probably show a higher concentration of the PPT in urban areas, since the erosion of the tax base on account of the tax credit would be greater in rural areas as compared to urban areas (11).

As to the distribution of the burden of the PPT in terms of economic categories, it is evident from the estimates provided in Table 4, that in 1971, the economic categories of significance were trade (43.4 per cent), agriculture (35.4 per cent) and manufacture (16.1 per cent). The estimates and the emerging distributive pattern of the PPT, in Table 4, are however, of limited use, in that it does not take into account the tax credit granted. Of interest is the distributive pattern of the PPT net of tax credit.

For the year 1970, Foeller (8) estimated that the PPT liability (net of tax credit) of the agricultural and mercantile sectors would be $11 millions and $21 millions, respectively. Further, according to the Dept. of Revenue (12), the PPT liability of the manufacturing sector in 1970 amounted to about $10 millions. It is assumed that the reduction in tax liability of the manufacturing sector on account of the tax credit would be negligible. Hence, it is presumed that the PPT (net of tax credit) in 1970 would have been distributed on the following basis: agriculture (26.2 per cent), manufacture (23.8 per cent) and mercantile (50.0 per cent). Assuming that this relative share would have prevailed in 1971, an estimate of the distribution of the PPT in 1971 is given at Table 5.

A comparison of the data presented at Table 4, and Table 5, indicates that the effect of the tax credit has been to

Table 5. Estimate of the PPT levied, net of tax credits, in 1971

Class of property	Millions of dollars	%
1. Agriculture	12.3	26.2
2. Manufacture	11.2	23.8
3. Mercantile[a]	23.5	50.0
Total	47.0	100.0

[a]The mercantile sector includes all non-government sectors other than agriculture and manufacture.

reduce the PPT burden of the agricultural sector and consequently to increase the relative burden of the manufacturing and mercantile sectors.

E. Elimination of the PPT

There is a growing belief (11, 22, 21) that the structural defects of the PPT more than outweigh its benefitial effects and hence its elimination is keenly advocated. It is not within the scope of this study to examine, in depth, the views held as to the merits and demerits of the PPT. However, to reinforce a subsequent discussion on the suitability of the introduction of a VAT, it may be appropriate at this juncture to spell out, very briefly, the agruments for the elimination of the PPT. The need to eliminate the PPT may be examined in terms of regressivity, neutrality, resource allocative

efficiency, tax evasion and administrative cost.

1. Regressivity

The PPT is primarily a regressive tax and does exert a relatively greater burden on individuals and institutions at low levels of income as opposed to individuals and institutions at high levels of income. Moreover, the severity of the tax burden would depend on the shiftability of the tax burden. If the tax is completely shifted either forward or backward by all parties concerned, then an attempt to evaluate the regressivity or progressivity of the PPT is a meaningless exercise. However, if the degree of shiftability is not uniform among different classes of income earners, then there is the possibility that the initial regressivity of the PPT may be either aggravated or mitigated.

It is asserted, quite correctly, that firms in the agricultural sector and the relatively small trading and industrial units, faced with severe competition in their respective areas of operation, would probably not be in a position to shift the burden of the tax. On the other hand, the relatively large industrial and trading units, in view of their monopolistic or oligopolistic control over certain areas of operation (inclusive of geographic areas), may be able to shift, at least in part, the tax burden. The fact that there is a possibility for the large units in trade and industry to shift the burden of the PPT, coupled with the observation that

the farming sector and the relatively small trading and industrial units will not be able to shift the tax, lead to the conclusion that the PPT would remain a regressive tax.

2. Neutrality

It was observed earlier[1] that the PPT is primarily a tax on inventories of industry and business, and livestock, agricultural machinery and equipment of agricultural farms. Hence, the tax lacks uniformity or horizontal equity. It discriminates one form of asset against another. Moreover, the inventory requirement of one type of industry or business may differ from that of another and also, some may be subject to seasonal fluctuations in inventory requirements and others not. It is therefore held that the PPT violates one of the fundamental requirements of a just tax, i.e., neutrality.

3. Tax evasion

The administrative features of the PPT are such that they offer ample room for tax evasion or avoidance. The purpose here is not to claim that there is in fact tax evasion but to focus attention on the possibilities of tax evasion. It will be noted that the PPT levy is determined as per assessment of personalty on January 1, each year. It is perfectly legitimate and in fact a rational behavior on the part of the tax unit to adopt ways and means so as to ensure that the stock of

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[1] See page 5.

personalty is kept at the minimum level on the day of assessment. Moreover, there is the possibility that the individual could conceal certain personalty and escape tax liability.

4. Administrative problems

It is reported that the administration of the PPT in the State of Iowa warrants a considerable proportion of the assessors' time (11). Added to the time element is the difficulty confronted by assessors to individually value a variety of voluminous inventory. As a consequence, the assessors probably will not be able to ensure a complete coverage of personalty, despite spending a considerable portion of their time.

5. Resource allocation

It is held that a tax to be acceptable should not only satisfy equity criteria but should also be capable of allocating resources efficiently (26). The PPT, by discriminating against personalty-intensive economic units would, evidently, cause nonoptimal allocation of resources. The allocative aspect of the PPT was perhaps one of the factors that led to the exemption of bovine female cattle, three years of age or older, from the tax base with effect from January 1, 1970. It is, however, doubtful whether the said legislative change in 1970 would have completely overcome the inefficient allocation of resources caused by the PPT.

In sum, the PPT violates both vertical and horizontal equity considerations and, thus, emerges as an unjust tax. Moreover, the administration of the PPT, apart from being relatively costly, does not guarantee complete coverage of tax liability. Added to these, is the concern that the PPT would cause inefficient allocation of resources. All these considerations have had a significant contribution to the growing belief that the PPT ought to be eliminated.

III. VALUE ADDED TAX: A CONCEPTUAL ANALYSIS

A. Definition

The economist's concept of a VAT would be a flat rate (ad valorem) tax on the value of goods and services produced by every business enterprise. The value added, or the net contribution of a business enterprise towards the social output, may be arrived at, using the subtraction method, by deducting purchase of inputs produced by other firms from the value of production. Alternatively, the value added may be estimated via the addition method i.e., by aggregating all payments made by a business enterprise to its factors of production. In sum, a broad based VAT may be regarded as a levy on business enterprise, i.e., a levy on income generated at the source of economic activity.

B. Need for a Tax on Income at the Source

It is now appropriate to examine the need to develop such a tax, particularly at the subnational level. The prime function of any business enterprise is to organize production with a view to create income. In doing so the enterprise emerges as a vehicle thru which individuals, in their roles as consumers or owners of factors of production, derive the benefits of economic activity. Consequently, the business enterprises become "a convenient, efficient and expedient

instrument for collecting taxes" (5). It is essential, however, to recognize the fact that all taxes are ultimately paid by individuals either by way of higher prices for goods and services or by way of reduced factor income. This raises the question why a tax on income at the source is preferred to that at the place of personal receipt or disposition. The answer depends on the structural characteristics of the economy that is being examined.

In a closed economy it does not matter much whether the tax levy is on income at the source or at the point of receipt or disposition, in so far as the tax levy is a general one without exemptions (20). At the subnational level, it is of importance whether the tax levy is on income at the source or at the point of receipt or disposition, in view of the fact that tax jurisdictions lack authority to restrict the mobility of labor, capital and commodities across their borders.

Due to the openness of the subnational economies, non-resident individuals owning all or part of a resident enterprise will not be covered by a tax system based on income, wealth or wealth transfers. Moreover, resident individuals could engage in spending beyond tax jurisdictions and thereby escape from liability of sales and consumption taxes. Another important implication of the openness of the subnational economy is that externality benefits resulting from state and local government expenditure programs extend beyond the

borders of the tax jurisdiction. Thus, a need arises to evolve a tax system that would capture all the beneficiaries, (i.e., consumers, factor owners and wealth holders, whether resident or non-resident) of the public programs undertaken at the subnational level. In other words, if the cost of public programs of subnational governments are to be recouped from those who benefit by them, then a tax based on business activity (i.e., a tax on income at the source) is more desirable than that at the point of receipt or disposition.

C. Rationale of VAT

It was observed in the preceding section that there appears to be a need at the subnational level for a tax on income at the source rather than on the point of receipt or disposition. At the outset, it will be recognized that the base of the VAT (income-type) is the net product originating from a business entity and it thus directly measures the use of resources. Moreover, the rationale of the VAT could be established in terms of the benefit principle, neutrality, revenue productivity and administrative compliance.

1. Benefit principle

The VAT, which is applied on the level of economic activity of a business enterprise regardless of its profitability, is consistent with the conceptual justification for taxation of business enterprise at the subnational level. It

enables the cost of state and local government programs to be spread among the beneficiaries, wherever they may reside, via the business enterprise. The basis of the VAT is thus in conformity with the benefit theory of taxation.

2. Neutrality

An important feature of the VAT is that it conforms, by and large, to the concept of neutrality in that it does not tend to distort the manner in which resources are allocated among industries or between vertically integrated business enterprises and a vertical chain of small concerns buying and selling from one another. It favors no one group and assures equal treatment of essentially similar tax payers and offers different treatment of essentially different tax payers. Moreover, it does not interfere with economic decisions such as those regarding input mix, type of business organization, or capital structure which would be made in the absence of the VAT.

3. Revenue productivity

One of the attractive features of the VAT is its revenue productivity. It provides a larger volume of revenue per percentage point of tax rate than any other tax, with the exception of the turnover tax (28). A study of the business activity tax (which could be regarded as a member of the VAT family) in Michigan indicates that the coefficient of income

elasticity of the VAT would be greater than unity (5). Moreover, the VAT would provide relatively greater stability to state revenue collections than income tax. The built-in stability provided by VAT is primarily because tax liability is based on value added rather than net profit (29). Moreover, since payroll (major component of value added) normally tends to be more responsive to increases in income as against declines in income on account of trade union activity, the VAT too would display a similar tendency (5). In sum, the VAT is capable of keeping pace with revenue requirements of the state and also assures stability of revenue collections (5). Thus, the VAT would add strength to the revenue structure of state and local governments and help to overcome their growing fiscal imbalance (10, 15).

4. Administrative compliance

The features of the VAT are such that the computation of tax liability is simple and direct. Moreover, taxpayers will be able to assess their tax liability with certainty and readily from the conventional financial summary statements. Further, tax assessors too would experience the same convenience in auditing tax returns.

D. Three Variants of VAT

A review of the literature (5,7,16,25,27,19) reveals three major variants of the VAT, namely, consumption-type VAT, income-

type VAT and gross product-type VAT. The significant differences among the three variants may be demonstrated via the subtraction method and/or the addition method. An illustration is given below using the addition method and the conventional national income definitions (25).

1. Consumption-type VAT:

   Tax base = C = W + P + D - I

2. Income-type VAT:

   Tax base = C + I - D = W + P = NNP

3. Gross product-type VAT:

   Tax base = C + I = W + P + D = GNP

where,

C = Consumption

I = Investment

W = Wages

P = Profit

D = Depreciation

NNP = Net National Product

GNP = Gross National Product

It is evident from the above illustration that the major variants of the VAT primarily differ in the way capital investment is treated. In the consumption-type VAT all kinds of investment expenditure (i.e.,investment on forced account, purchases of plant and machinery from other businesses, inventory accumulation etc.) are excluded from the gross

product originating from a business enterprise. In the income-type VAT, however, there is provision only for the deduction of depreciation allowances. Finally, at the extreme is the gross product-type VAT which does not entertain any deductions on account of capital expenditure. It is generally viewed that a broad-based VAT of the gross product type would amount to capital goods being taxed twice (once at the time of purchase and again when used in production). Further it would discriminate against owners of capital and favor renters of capital. Moreover, a tax on investment goods might deter potential investments, thereby impeding economic growth. The consumption-type VAT, on the other hand, has been favored by those wishing to stimulate investment, economic growth and tax simplification. However, the consumption-type VAT would favor new and expanding firms and discriminate against established and non-expanding firms, thereby adversely affecting the competitiveness of the latter. Furthermore, the consumption-type VAT by reducing the tax base would require a higher tax rate to yield a given tax revenue. On balance, the income-type VAT appears to be the most desirable. For purpose of this study, it is assumed that a VAT of the income type would be introduced to replace the PPT.

E. Economic Effects of VAT

Of interest to this study are the following questions, in so far as the economic effects of the VAT are concerned. Is the VAT, in effect, an income tax or a transaction tax? Will the VAT be shifted forward or backward from the point of impact? If shifted forward to the consumers by way of higher prices, can the VAT be exported? What will be the impact of the VAT on the growth of the subnational economy?

1. Nature of VAT

According to Musgrave (20) a broad-based VAT (that is, a tax on both consumption goods and capital goods), in a closed economy, would be similar in effect to an income tax in that the burden of the VAT would rest on factor owners. Due, however, would argue against a classification of this nature on the grounds that a tax on capital goods is ultimately shifted forward, and therefore would contend that a general VAT merits classification as a tax on consumption (3). There is apparently little disagreement among economists in treating the consumption-type VAT and the income-type VAT as transactions taxes. As shoup points out, a VAT in a stabilized closed economy would in principle equal the total retail sales, under mutatis mutandis assumptions (27). Thus, it is held that a VAT will be shifted forward in full, as in the case of a sales tax. In sum, the prevailing opinion is that the VAT

of the income type is similar in nature to a sales tax and that the tax will be shifted forward in full.

2. Tax shifting

The observation that the income-type VAT will be shifted forward in full is, however, applicable only to a closed economy.

It does not necessarily follow that this would be the case of a subnational economy (open economy), primarily "because the criteria or determinants of shifting will differ in the open versus closed framework" (5).

The question of tax shifting may be viewed in the context of a short-run partial equilibrium analysis and in terms of two types of firms: firms primarily engaged in intra-state trade and firms operating in regional or national markets. Moreover, the discussion is limited to the major factors that explain the ability of firms in an open economy to shift the burden of the VAT.

To a considerable degree, the ability of the intra-state firms to shift the burden of the tax would depend on the severity of competition met from out-of-state products, assuming the existence of price competition and that the introduction of the VAT would have a significant impact on the post-tax price differential. To re-state, the lesser is the severity of competition between in-state products and out-of-state products, the greater is the ability to shift the tax

forward. Moreover, the ability to shift the tax would also depend on the price elasticity of the final demand and the price elasticity of resource supply. To the extent the tax is not shifted forward, the burden of the tax will fall on factor owners, both resident and non-resident.

The determinants of the ability of the firms engaged in trade in regional or national markets to shift the burden of the VAT are not significantly different from those applicable to intra-state firms. Nevertheless, the analysis has to be extended to cover the market conditions prevailing in regional of national markets. Thus, assuming price competitions are significant, the degree of competition, price elasticity of final demand and price elasticity of resource supply in the regional or national markets would have a significant impact on the ability of these firms to shift the tax forward. To the extent that these firms are able to dominate the regional or national markets and are able to act as price-setters the tax will be exported. Moreover, this would be the case if price is not the critical factor that determines the sales performance of a firm. Finally, even in the context of price being a critical factor determining the market performance of firms, the taxes imposed by state governments may not significantly contribute to the price spread among competing firms. A recent study by the Advisory Commission on Intergovernmental Relations (ACIR) observed that

the subnational tax policies tend to offset each other in terms of tax costs in business, thereby minimizing the importance of state taxes as a price-determining factor among competing firms.[1] Thus, there is reason to believe that a bulk of the tax burden of the firms operating in regional or national markets would be shifted on to the consumers of the regional or national markets. The same line of reasoning seems to be applicable to the case of intra-state firms too. What is not shifted forward will be borne by factor owners, resident and non-resident.

3. Location of industry

A tax could have a positive or a negative influence on the growth potentials of a subnational economy via a multiple of economic variables. Of interest to this study is its impact on location of industry. In other words, will a VAT encourage or discourage or have no effect on the entry of new industries?

One view is that new industries would tend to avoid states with relatively high taxes. Therefore a VAT, being a tax on business activity, would deter the entry of new enterprises and would have an adverse impact on the growth potentials of the state. The validity of this argument rests on the presumption that there is in fact a strong correlation between

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[1] Cited in Ebel (5).

tax rates and location of industry. It is to be noted that the location decisions of business enterprises are dictated by a variety of factors (for instance, availability of raw materials and labor, proximity to final market, public service facilities, transport cost etc.) and the tax cost may be one of them. Moreover, even when the tax cost becomes the critical factor in location decisions a new industry may not necessarily choose the state with relatively low tax rates. It is conceivable that new firms might view the tax rates as indicators of the quality of public services and might correlate low rates with poor public services. Furthermore, if taxes are shifted it may not be a prime factor influencing location decisions. A number of studies undertaken to assess the importance of taxes on location decision have concluded that there is no indication of a significant correlation between the two economic variables (25, 5, 4). In sum, there is no evidence to suggest that a VAT would deter the entry of new industries into the State of Iowa.

Will the VAT have any positive effects on the growth potentials of the state economy? Inter alia, businessmen do not generally favor a tax that (a) discriminates against one group of taxpayers, (b) contributes to multiple taxation among jurisdictions, (c) results in endless pyramiding of tax on tax, (d) entails unreasonable accounting expense in record-keeping and computing, and (e) is unstable in yield (29). The

fact that the acceptance of a VAT is not constrained by any of these factors is self evident and needs no elaboration. Thus, a VAT, because of its neutrality, simplicity and revenue productivity features might have a positive influence on location decisions, thereby promoting economic growth.

IV. A COMPARATIVE ANALYSIS OF PPT AND VAT

Though some aspects of the PPT and the VAT were examined in the preceding two chapters, it is desirable that the merits and demerits of the VAT be evaluated in relation to the PPT. A comparative study, hopefully, would not only demonstrate the superiority of VAT over PPT but also the probable trade-offs consequent to the replacement of the PPT by the VAT.

At the outset, it will be recognized that a tax on business, to be acceptable at the subnational level, ought to satisfy, inter alia, three basic requirements. First, the tax should be responsive to the growing fiscal needs of the state and local governments. Secondly, it should be consistent with the benefit theory of taxation such that the cost of public programs, undertaken at the subnational level, are distributed among the individuals, whereever they may reside, on the basis of benefits derived. Finally, the tax should demonstrate a capacity to promote rather than retard economic growth. In sum, a tax should demonstrate revenue adequacy (27), consistency with benefit theory of taxation (7) and be able to promote economic growth.

The inherent structural features of the PPT are such that the income responsiveness of the PPT would be substantially less than unity. The VAT, on the other hand, not only exhibits a relatively high income elasticity (28) but also ensures a built-in stability to the tax structure (5). This aspect is

all the more important at a time when the income responsiveness of the tax structure is less than that of the expenditure structure (15).

It is true that the philosophy of the PPT is not in tune with that of the ability-to-pay concept of taxation. Yet, it cannot be regarded as a tax in comformity with the benefit principle, for it provides a very poor index of the use of public services by business enterprises. The VAT, on other hand, provides a much superior index of the use of public services by business enterprises.

Finally, it was observed earlier[1] that the PPT violates the concept of neutrality by discriminating against personalty intensive business enterprises. On the contrary, it was seen[2] that the VAT is in conformity with the concept of neutrality. Thus, a replacement of the PPT by a VAT would result in a better allocation of resources in the private sector.

One of the criticisms levelled against the VAT is that it violates the ability-to-pay concept of taxation. The contention is that a VAT, being a tax on business activity rather than profit, would adversely affect firms incurring losses or with low margins of profit. Since the "no profit, no tax" argument has been one of the factors that led to the repeal

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[1] See page 12.

[2] See page 18.

of the BAT in Michigan (6), defeat of the gross margin (value added) tax in West Virginia (7) and the suppression of VAT bills in other states, it is important that this aspect be examined in detail. Of interest are the following questions. Is the "no profit, no tax" argument valid? Conceding the validity of this argument, is it applicable in the context of a replacement of the PPT by the VAT?

The weakness of the "no profit, no tax" argument could be demonstrated in two ways. First, it overlooks a simple fact that the business enterprises ought to treat public services as an additional input just as other conventional inputs are treated. In other words, tax cost should enter into the cost calculations of the firms just as wages, interest and rent. An argument that public services are not inputs implicitly advocates that firms incurring losses or with low margins of profits are to be subsidized by the state. Moreover, under assumptions of tax shifting the contention that VAT would be a millstone around the neck of unprofitable firms becomes an illusion (28). Thus, there is no conceptual justification for the "no profit, no tax" argument.

The other consideration is the applicability of the "no profit, no tax" argument in the context of a replacement of the PPT by the VAT. As stated earlier the PPT also violates the ability-to-pay concept. Hence, the "no profit, no tax" argument has no validity against the introduction of the VAT

as a replacement for the PPT. Thus, the introduction of the VAT at the subnational level, either as a new source of revenue or as an alternative to an existing tax, merits favorable consideration. However, the introduction of the VAT in place of the PPT would cause or aggravate two administrative problems: Definition of personalty and allocation of value added of multi-state firms.

Hitherto, personalty and realty were subject to the same tax rates and consequently, the vagueness in the definition of personalty did not cause administrative problems (11). However, with the replacement of the PPT by the VAT it would be necessary to define personalty precisely. Failure to do so might result in tax leakages.

The introduction of the VAT would also strengthen the already felt need[1] for a mechanism to reasonably allocate the value added of multi-state firms operating in the State of Iowa. Three methods of allocation[2] have been suggested (5): First, is the separate accounting method; second, is the direct allocation method; third, is the one factor (say payroll) or a multi-factor (payroll, sales and property) formula, with or without weightage, to allocate the value added of multi-

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[1] It will be noted that the implementation of the state corporate income tax also warrants an appropriate mechanism to apportion the income of multi-state firms. Thus, this is not a peculiar feature of the VAT alone.

[2] In the case of the transportation industry special allocation formulae are adopted.

state firms[1]. While Michigan required[2] (5) the adoption of a three factor formula (sales, payroll and property) with equal weightage, West Virginia's proposal allowed (7) for a separate accounting method or a two factor formula (payroll and property) with equal weightage. The National Conference of Commissioners on Uniform State Laws (NCCUSL) held in 1957 suggested the adoption of a three factor formula (payroll, property and sales) to overcome the administrative problems caused by multi-state firms. It appears that either separate accounting or the two factor (payrolls and property) formula with equal weightage are the appropriate methods for implementation of the VAT (7).

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[1]For an explanation of the three accounting methods see Ebel (5).

[2]In lieu of the formula apportionment the use of the separate method or the direct allocation method was permitted if the business received approval from the tax commissioner.

V. COMPUTATION OF THE GROSS STATE PRODUCT AND THE TAX BASE

A. Gross State Product

Conceptually, the Gross State Product (GSP), like the Gross National Product (GNP), may be estimated via three alternative methods: (a) gross expenditure, by sector, (b) gross income, by type, and (c) gross product, by industry (13). Of the three methods, the expenditure method appears to be the least feasible alternative because of the difficulty in obtaining required data, particularly the exports and imports of goods and services to and from other states. Though the gross income method and/or the gross product methods are relatively easier to apply in the computation of the GSP, they too warrant specific details in respect of business activity.

Presently, official estimates of the GSP of Iowa are not available. Hence, a need arises for an estimate of the GSP originating in Iowa. Towards this end, this study had two alternatives. First, to collect the relevant details from all (or a sample of) business enterprises in the state and to compute the GSP via the gross income method or the gross product method. Second, to crudely estimate the GSP utilizing available state and national data. Despite the recognition of the relative merits of direct estimation over indirect

estimation, this study opted for the second alternative for the following reasons. First, the collection of data (even on a sample basis) directly from business is costly and time consuming. Second, of importance to this study is the relative share of the major sectors rather than the absolute value of gross product originating in each sector. Third, recent studies (13, 14) have successfully demonstrated that indirect estimation of GSP would suffice for a differential impact analysis.

Kendrick and Jaycox (13) have shown that the GSP could be estimated, via the gross income method and the gross product method, from published data. They employed a direct method of estimation for the government sector and the farm sector and an indirect method for the major sectors in the non-farm private sector.

An illustration of the direct method adopted by Kendrick and Jaycox is presented at Table 6 and Table 7. The same methodology is adopted in this study to estimate the gross product originating in the farm sector and the government sector.

To estimate the gross product originating from the non-farm private sector Kendrick and Jaycox employed a "blowup" technique. For each industrial group they compute the U.S. ratios of (a) personal income to national income, (b) capital consumption allowance to national income and (c) indirect

Table 6. Gross product originating in the government sector: Iowa[a] (current dollars - in millions)

	1971
1. Wages and salary disbursements	1180
2. U.S. supplement to above (weighing factor)	.123
3. Estimated supplements to wages and salary (2x1)	145.5
4. Gross product originating in the government sector (1+3)	1325.5

[a]Adopted from (18).

taxes to national income and use these national coefficients to blowup the personal income, capital consumption allowance and indirect business taxes of the state to arrive at the gross product originating from each of the major industrial groups. The presumption of this indirect method of estimation is that "the structure within each private non-farm industry group of the state is similar to that of the nation, or that divergences are offsetting" (13).

An alternative method would be to use the U.S. ratio of wages and salary disbursement to gross product in respect of each industrial group to arrive at the gross product of the non-farm private sector. This method adopts the same blowup technique of Kendrick and Jaycox except that wages and salary disbursements are being used as the base instead of personal income. Since the use of wages and salary disbursement as the

Table 7. Gross and net farm product: Iowa[a] (current dollars - in millions)

	1971
Value of total farm output	
1. Cash receipts from marketings	4024.9
2. Value of home consumption	32.8
3. Gross rental value of dwellings	143.6
4. Less: net rent to non-farm landlords	229.9
5. Net change in inventories	32.9
6. Total (1+2+3-4+5)	4004.3
Intermediate production expenses	
7. Feed	614.9
8. Livestock	721.6
9. Seed	85.3
10. Fertilizers	197.8
11. Repairs and operation of equipment	324.1
12. Misc. operating expenses	316.4
13. Total current expenses (7+8+9+10+11+12)	2260.1
Gross farm product (6-13)	1744.2
14. Capital consumption	276.9
Net farm product (6-13-14)	1467.3

[a]"Farm income", state estimates, USDA, August 1972.

base of computation was relatively easier, this study opted for the use of the ratio of wages and salary disbursement to gross product to estimate the gross income originating from the non-farm sector, except the manufacturing sector (for which official estimates are available). An illustration of the method used in this study to estimate the gross product

of the non-farm private sector (except manufacturing) is given at Table 8. There is one other consideration which prompted the use of wages and salary disbursment as the base instead of personal income. It is the recognition that, while the movement of the GSP need not necessarily be in conformity with variations in personal income, wages and salary disbursment being the major component of gross product ought to provide a relatively better index of income originating at the source.

At the outset, it should be recognized that the method adopted in this study suffers from the same defects that are attributable to the method used by Kendrick and Jaycox. Basically, it assumes that there is no structural difference between the private non-farm sectors of the state and the nation, or that such divergences are offsetting. Further, as acknowledged by Kendrick and Jaycox, the two basic defects of the blowup technique are that the "the national coefficients for certain industry groups may be wide of the mark in some states, and in some states, movement of average prices, especially in the short-run, and for local products, may deviate significantly from nation averages" (13).

An estimate of the Gross State Product, by major sectors, for the years 1967 thru 1971, is given at Table 9. Details of the percentage distribution of the Gross State Product, by major sectors, are presented at Table 10. It appears that the

Table 8. Gross and net product originating in the construction sector - Iowa[a] (current dollars - in millions)

	1971
1. Gross product originating in the construction sector (U.S.)	50700
2. Wages and salary disbursement in the construction sector (U.S.)	25005
3. Ratio of gross product to wages and salary (U.S.)(1/2)	1.448
4. Wages and salary disbursement in the construction sector (Iowa)	387
5. Estimate of gross product originating in the construction sector (Iowa) (3x4)	560.5
6. Capital consumption allowance in the construction sector (U.S.)	2800
7. Ratio of capital consumption to gross product in the construction sector (U.S.) (6/1)	0.055
8. Estimate of capital consumption allowance in the construction sector (Iowa) (5x7)	31.0
9. Estimate if net product originating in the construction sector (Iowa) (5-8)	529.5

[a]"Survey of Current Business", Table 4-27, August issues, Table 1.22 July issues.

Table 9. Estimate of Gross State Product - Iowa[a]
(Current dollars - in millions)

	1971	1970	1969	1968	1967
1. Agriculture	1744.2	1850.2	1775.9	1476.7	1506.2
2. Government	1325.5	1206.7	1080.4	975.2	882.4
3. Mining	76.5	72.5	71.0	76.0	67.3
4. Transport, Public utility, etc.	981.0	873.1	833.5	773.4	757.6
5. Manufacture	4241.1	3949.9	3729.9	3564.2	3250.9
6. Wholesale and retail trade	2182.2	2021.7	1899.4	1782.0	1646.4
7. Construction	560.5	531.4	500.0	475.5	457.2
8. Services	1145.3	1064.8	996.1	911.0	833.3
9. Financial, ins., real estate	1561.9	1440.5	1351.5	1239.1	1177.4
10. Other	31.4	29.1	27.6	26.0	26.5
Gross Product	13,849.6	13,039.9	12,265.5	11,305.3	10,605.2

[a]Due to rounding, details may not add to total.

Table 10. Percentage distribution of Gross State Product - Iowa[a]

	1971	1970	1969	1968	1967
1. Agriculture	12.6	14.2	14.5	13.1	14.2
2. Government	9.6	9.3	8.8	8.6	8.3
3. Mining	0.6	0.6	0.6	0.7	0.6
4. Transport, public utility, etc.	7.1	7.0	6.8	6.8	7.1
5. Manufacture	30.6	30.3	30.4	31.5	30.7
6. Wholesale and retail trade	15.8	15.5	15.5	15.8	15.5
7. Construction	4.0	4.1	4.1	4.3	4.3
8. Services	8.3	8.2	8.1	8.1	7.9
9. Financial, ins., real estate	11.3	11.0	11.0	11.0	11.1
10. Other	0.2	0.2	0.2	0.2	0.2
Total	100.0	100.0	100.0	100.0	100.0

[a]Due to rounding, details may not add to total.

GSP in 1971 would have been of the order of 13,850 millions of dollars, a near third (31 per cent) originating in the manufacturing sector. The other major sectors were wholesale and retail trade (16 per cent), agriculture (13 per cent), financial, insurance and real estate (11 per cent), government (10 per cent), services (8 per cent) and transport, public utilities etc. (7 per cent).

B. Tax Base

In computing the tax base the following assumptions were made: First, the type of VAT considered is the income variant; second, the government sector and transport, utilities etc. sector are exempt from VAT liability; third, no allowance is made for deductions and any other exemptions. The reason for the exclusion of transport, utilities, etc. sector is on account of the difficulty that may be encountered in distinguishing between realty and personalty held by them. Thus, it is assumed that this sector would continue to pay taxes on their personalty. The assumption that there would be no provision for deductions or exemptions is made solely to avoid complex computations.

Thus, the tax base is derived by deducting from the GSP the following: gross product from the government sector, gross product from transport, utilities, etc. sector, and capital consumption allowance of each of the other sectors. A summary of the tax base so derived is presented at Table 11. Further, a percentage distribution of the tax base is detailed at Table 12.

Table 11. Distribution of VAT base - Iowa[a]
(Million dollars)

	1971	1970	1969	1968	1967
1. Agriculture	1467.3	1553.0	1449.2	1129.6	1121.7
2. Mining	59.9	57.1	54.8	59.1	51.3
3. Manufacture	3859.3	3608.4	3427.6	3287.0	2998.0
4. Wholesale and retail trade	2072.4	1919.6	1802.3	1692.7	1561.5
5. Construction	529.5	501.8	473.2	454.9	431.9
6. Services	1060.4	987.9	923.1	845.7	773.0
7. Financial, ins., real estate	1327.7	1221.7	1143.4	1048.3	995.6
8. Other	28.6	26.6	25.4	24.0	24.4
Total	10,405.2	9,876.1	9,299.0	8,541.2	7,957.4

[a]Due to rounding, details may not add to total.

Table 12. Percentage distribution of VAT base - Iowa[a]

	1971	1970	1969	1968	1967
1. Agriculture	14.1	15.7	15.6	13.2	14.1
2. Mining	0.6	0.6	0.6	0.7	0.6
3. Manufacture	37.1	36.5	36.9	38.5	37.7
4. Wholesale and retail trade	19.9	19.4	19.4	19.8	19.6
5. Construction	5.1	5.1	5.1	5.3	5.4
6. Services	10.2	10.0	9.9	9.9	9.7
7. Financial, ins., real estate	12.8	12.4	12.3	12.3	12.5
8. Other	0.3	0.3	0.3	0.3	0.3
Total	100.0	100.0	100.0	100.0	100.0

[a]Due to rounding, details may not add to total.

VI. DIFFERENTIAL IMPACT ANALYSIS

The purpose of a differential impact analysis is to identify the effects of a substitution of one tax by another, for a given tax yield, on the distributional pattern of tax payments (14). The analysis is in terms of tax burden (monetary burden) rather than tax incidence. Moreover, it is a short-run partial equilibrium analysis and spillover effects are ignored.

Data in respect of the distribution of the tax burden under the PPT and the VAT are given at Table 13 for the year 1971. It will be seen that the substitution of the PPT by the VAT would have significantly reduced the relative burden of the agricultural sector from about 23.8 per cent to about 14.1 per cent and increased the relative burden of the manufacturing sector from about 23.8 per cent to about 37.1 per cent. In terms of dollars the tax burden of the agricultural sector would have declined from $12.3 millions to $6.6 millions and that of the manufacturing sector would have increased from $11.2 millions to $17.4 millions. In the case of the mercantile sector the effect of the substitution of the PPT by the VAT appears to be minimal both in relative and absolute terms.

Table 13. Estimate of the distribution of tax burden under PPT and VAT: 1971[a,b]
(Millions of dollars)

	PPT		VAT	
	$	%	$	%
1. Agriculture	12.3	26.2	6.6	14.1
2. Manufacture	11.2	23.8	17.4	37.1
3. Mercantile[c]	23.5	50.0	22.9	48.8
Total	47.0	100.0	47.0	100.0

[a]Data presented in this table are derived from Tables 5 and 11.

[b]Due to rounding, details may not add to total.

[c]The mercantile sector includes all non-government sectors other than agriculture and manufacture.

VII. SUMMARY

The PPT, as administered in Iowa, is by and large a levy on tangible assets held by individuals and business enterprises, with provisions for exemptions and deductions. Recent legislative amendments have significantly narrowed down the coverage of the PPT.

A bulk of the PPT is levied in urban areas, in 1971, the total PPT levy amounted to $75 millions, of which, about 60 per cent was levied in urban areas. Of late, the PPT levy has become more concentrated in urban areas, mainly on account of legislative changes and growth in business. In terms of economic categories, the distribution of the burden of the PPT levy is such that about two-fifths are accounted for by the trade sector. In 1971, the economic categories of significance were trade (43.4 per cent), agriculture (35.4 per cent) and manufacture (16.1 per cent). It appears that the effect of tax credit would be to reduce the relative share of agriculture and to increase that of trade and manufacture.

In the 1960's, the importance of the PPT, as a source of revenue, has declined both in absolute and relative terms. This trend is the outcome of the legislative amendments and the inherent structural features of the PPT.

There is a growing belief that the PPT is basically an undesirable tax and its elimination is advocated in terms of regressivity, neutrality, resource allocative efficiency, tax

evasion and administrative cost.

In the context of current fiscal needs of the state and local governments the repeal of the PPT would necessitate the introduction of new revenue measures. One of the alternatives open is the introduction of a value added tax as replacement for the PPT.

A tax on value added is primarily a flat rate (ad valorem) tax on the value of goods and services produced by every business enterprise. Three major variants of the VAT have been identified and they are, namely, consumption-type VAT, income-type VAT and the gross product-type VAT. The major variants of the VAT primarily differ in the way capital investment is treated. Of the three variants, the income-type VAT appears to be the most suitable.

A need for a tax on income at the source arises primarily on account of the openness of the subnational economy. This would be the case, particularly, if the cost of public programs of subnational governments is to be recouped from those who benefit by them.

The VAT appears to provide an ideal index of economic activity. Moreover, it is consistent with considerations of benefit principle, neutrality, revenue productivity and administrative compliance.

At the national level, a VAT of the income type is similar in nature to sales tax and there would be a full forward

shifting of the tax burden. However, at the subnational level, tax shifting would depend on a number of factors.

One view is that a VAT, being a tax on business activity, would deter the entry of new enterprise and therefore would impede the growth potentials of the state. There is, however, no evidence to support this view. On the contrary, "to the extent that it is regarded by businessmen as less discriminatory and capricious in its distribution among tax payers than the personal property tax, it is likely to be more conducive to economic expansion" (Report of the Governor's Minnesota Tax Study Committee, Chap. XVIII 1956, pp. 487-488).

A comparative evaluation of the structural features of the PPT and the VAT leads to the conclusion that the replacement of the PPT by a VAT merits serious consideration. One of the criticisms levelled against the VAT is that it violates the ability-to-pay concept of taxation. There is, however, no conceptual justification for the "no profit, no tax" argument for a tax on business. Moreover, this line of argument is not applicable in the context of a replacement of the PPT by the VAT.

The replacement of the PPT by a VAT may be expected to increase the tax burden of the manufacturing sector and reduce that of the agriculture sector. Meanwhile, the effect of the mercantile sector appears to be negligible.

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